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ABSTRACT

Neurolinguistic Progamming (NLP) has emerged as a new approach to counseling and psychotherapy. Though not to be confused with computer programming, NLP does claim to program, deprogram, and reprogram clients' behaviors with the precision and expedition akin to computer processes. It is as a tool for therapeutic communication that NLP has rapidly gained attention among the helping professions since its origins in the 1970s. This study re-examined the Eye Movements Model of NLP--which states that people's primary representational systems (PRS) can be identified through their eye movements--by using the newly developed 52-item inventory with right-handed Louisiana college students (N=102) from educational psychology classes. The results of the study supported claims of NLP proponents that while accessing the memory under stressed recalls to retrieve information, people do use different PRS. Thirteen yes/no type control items were used to demonstrate that identification of PRS is possible only under those conditions when people are made to think hard for information. Furthermore, it was found that the subjects were not aware on their own if they were visuals, auditory, or kinesthetic. This study also found that 13 subjects had more than one representational system. No significant differences were found at alpha level .05 in the distribution of PRS between genders and Cajuns and non-Cajuns as ethnic groups. (Contains 31 references.) (ABL)

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VALIDATION OF EYE MOVEMENTS MODEL OF NLP THROUGH STRESSED RECALLS

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RUNNING HEAD: VALIDATION OF NLP EYE MOVEMENTS MODEL

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ABSTRACT

This study re-examined the Eye Movements Model of Neurolinguistic Programming by using the newly developed 52 item inventory. The study supports the claims of NLPers that while accessing to the memory under stressed recalls to retrieve information, people do use different primary representational systems. Several (13) yes/no type control items were used to demonstrate that identification of PRS is possible only under those conditions when people are made to think hard for information.

Furthermore, it was found that the subjects are not aware on their own if they are visuals, auditory, or kinesthetic. This study also found that several subjects (13/99) had more than one representational system. No significant differences were found at alpha level .05 in the distribution of PRS between genders and Cajuns and non-Cajun as ethnic groups.

INTRODUCTION

With its "high-tech" name, Neuro-Linguistic Programming, (NLP) has emerged as a new approach to counseling and psychotherapy. Though not to be confused with computer programming, NLP does claim to program, deprogram, and reprogram clients behaviors with the precision and expedition akin to computer processes (Sandhu, 1984) According to its pioneers, "NLP is the art of creating models of human excellence with a focus on communication and outstanding behavior in the fields of therapy, education, medicine, and business" (Grinder, Delozier, and Associates, 1984).

It is as a tool for therapeutic communication that NLP has rapidly gained attention among the helping professions since its origins in the early 1970's. The proponents of this newly developed "ultimate behavioral engineering tool" claim that they are "able to secure results--5 minutes guaranteed 'cure' for phobias in psychotherapy; quick graceful and satisfying resolution of conflict in dead-locked negotiations and settlements in business; success in teaching 'educationally handicapped children' formerly impossible skills measured in minutes - results which bordered on magical for the professionals of these disciplines" (Dilts, Grinder, Bandler, & DeLozier, 1980, Forward to Neurolinguistic Programming).

Grinder and Bandler claim such as awesome power of NLP that they dare to equate it with magic. Naturally while letting their "Genie" out of the bottle, they have not hesitated to call their works, The Structure of Magic I (1975), The Structure of Magic II (1976), and Magic in Action (1984). NLP'er like Lankton followed suit to name his work, Practical Magic (1980).

Charmed with the magical qualities of NLP, Yeager (1985) exclaims, "In fact, NLP is to behavioral science as Einstein is to physics" (p. 6). Dilts, Bandler, Grinder, and DeLozier (1980) are so impressed with their newly found extremely powerful and effective approach that they sincerely hope:

> As the tools of NLP find their ways into other fields and the number of NLP'ers increases, we will witness in our life time marvels as grandiose as a man on the moon, the permanent elimination of smallpox from the planet earth, and atomic power. We may witness perspectives as broad as ecology, relativity, and civil, woman's, and human rights. (Preface)

All that glitters is not gold in the eyes of the critics of NLP. There appears to be several controversial issues and unanswered questions about the veracity and validity of this newly developed model for behavioral change. And above all, "What frightened NLP's detractors--what still frightens them--is that the technique is not snake oil" (Conway and Siegelman, 1983, p. 72).

Goleman (1979) accepts the efficacy of NLP as applied to human communications but doubts the claims of NLP'ers to be able to equip anyone with the abilities of geniuses in every field. Harman and O'Neill (1981) are skeptical that phobias can be treated in 10 minutes. Also, they are concerned that "there has been no

systematic research into or evaluation of NLP treatment methods, or comparing NLP with other counseling approaches" (p. 453).

Kraft (1982) raised the similar objections about the lack of scientific inquiry into NLP model stating that:

> Claims abound from the NLP camp and the model is heralded by its principal framers as a quantum jump in the understanding of the process of human behavioral change. Yet, it appears that the scientific verification of the NLP model, if verification is possible at all, lags far behind. (p. 62)

Conway and Siegelman (1983) charge that "in their efforts to market NLP as the ultimate behavioral engineering tool, Bandler and Grinder, and their colleagues have been disrespectful of the imperatives of scientific enterprise" (p. 91). The strongest and most stunning challenge came from Dorn (1983) demanding the NLP exponents to enter the research arena themselves to "respond with some evidence to substantiate their claims, as counseling researchers have been willing to pose some questions of concern" (p. 155).

In response to the charges that NLP has not met the rigorous demands of science, Dilts (1983) stated:

> Research that attempts to evaluate the truthfulness of a model's claims generally does so on the basis of statistical averaging and other statistical computations. Because NLP is concerned with the identification and utilization of behavioral patterns in an ongoing

> interaction, statistical quantities are of no value to us. Surely, a statistical figure tells nothing of the unique individual(s) before you. In NLP we believe that people have to rely on statistics when they don't understand the underlying pattern. (p. 65)

John Grinder (personal communication, Feb. 15, 1984) shared the similar view with this author when he wrote:

> ...I have built a series of models--step by step procedures which when followed yield predictable and high quality results in the real world. The isolation of one or more procedures in the artificial environment of a designed experiment is hardly practical in my understanding.

Dilts, Grinder, Bandler, & DeLozier (1980) assert that they are the modelers and their work should be only evaluated as a model, "ignoring whether it is true or false, correct or incorrect, aesthetically pleasing or not, in favor of discovering whether it works or not, whether it is useful or not" (Forward to Neuro-Linguistic Programming, Volume I).

REVIEW OF EMPIRICAL LITERATURE

Relevancy, efficiency, validity, and veracity are some of the criteria which every new approach must meet before it is welcomed and inducted into the existing body of knowledge in any field. NLP is no exception despite the assertions of its exponents and

proponents that NLP model is operational and a "customized" approach which is beyond the grasps of statistical tests.

In our present scientific era, it is next to impossible to accept new knowledge blindly merely upon the verbal assertions of its founders. Especially in the field of counseling, psychology, and psychotherapy where people's mental health and well-being are at risk, and liabilities are many, no practitioner can take risk to play with people's lives.

On the other hand, when NLP assertions appear harbingers of magic like results and its popularity is spreading like a wild fire, it is difficult to ignore NLP as merely a "pop psychology craze" (Conway and Siegelman, 1983) or disregard it just a fleeting wizardry of NLP proponents with transitory "band wagon" effects.

To resolve this dilemma to accept or not to accept NLP as a genuine approach to counseling and psychotherapy and grant it a proper place in literature of helping professions, numerous research studies have been conducted during the past fifteen years. Most of these studies have primarily focused on two areas, "the NLP eye movement model, and the NLP claim for a primary representational system" (Buckner, Meara, Reese, & Reese, 1987, p. 233).

The first and most celebrated review of such studies conducted so far by Sharpley (1984) revealed that "although there are several specific findings that provide support for NLP, the majority are either non-supportive (17/29) or uncertain (3/29), with only nine of these findings (i.e., less than one third) in support of NLP on

this issue of the PRS and its use" (p. 246). From these findings Sharpley (1984) challenged the credibility of NLP as a therapeutic procedure and demanded the verification of claims made by the NLP proponents because "the issues if accountability are of vital importance in the mental health field and the use of NLP because it is comfortable to counselors alone is hardly justifiable" (p. 248).

The recent survey conducted by the author of this study indicated that only twelve from the total of available fifty-six, published and unpublished studies, merely 21% have supported NLP assertions and assumptions. Such an alarming low success rate of NLP effectiveness is a major cause of concern in all circles, helpers and helpees alike.

Intuitively speaking NLP is very enchanting, convincing, and captivating; but scientific testing is casting serious doubts about its authenticity, legitimacy, and veracity. At the present time when NLP is passing through the growing pains, phenomenon is best described in the title of Brownlee's (1981) article "NLP--a highway of diamonds with (almost) no-one it." Under these conditions, NLP appears as a "will-o-wisp" at the beck and call of only its masters, impossible to be captured by others.

Einspruch and Forman (1985) have made a timely rescue effort to save NLP from the sharp snatches and scrutinies of its critics. They have discounted Sharpley's review of NLP studies and have taken him to task by pointing out that Sharpley has failed to notice that "the authors of studies he reviews make fundamental

errors by neglecting the NLP model of pattern recognition, linguistic communication, and therapeutic intervention" (p. 590).

Furthermore, Einspruch and Forman (1985) have gone one step further to review 39 available empirical studies themselves and have made a detailed critical appraisal of these studies to demonstrate their flaws. The design errors of these studies are summed up under six major categories:

a. lack of understanding of concepts of pattern recognition and inadequate accounting of context.
b. unfamiliarity with the NLP as an approach to therapy
c. unfamiliarity with the NLP "meta model" of linguistic communication.
d. failure to consider the role of stimulus-response associations
e. inadequate interviewer training and definitions of rapport, and
f. logical mistakes. (p. 590)

To prove their point, Einspruch and Forman (1985), have categorically reviewed all above mentioned 39 studies one by one to glean out their errors. Surprisingly, nobody has responded to them yet to express any disagreement with them. If Einspruch and Forman are correct in their criticism, naturally NLP can't be discounted as a non viable therapeutic modality at the present time. On the contrary, we need to sharpen our sensibilities, sensitivities of research instruments and procedures.

FOCUS OF THE PRESENT STUDY

The present study is designed to test the basic tenet of NLP model that people's primary representational systems can be identified through their eye movements. The rationale for testing this phenomenon is manifold:

a. Identification of primary representational systems is one of the fundamental tenets of NLP. It is crucial that the very basic elements of this new approach are tested before advanced concepts are considered.

b. A significant number of research studies, 90% or more, have been conducted to verify this NLP tenet without conclusive results. It is important that this controversy is resolved before future studies are conducted to test other NLP concepts.

c. In the light of numerous design errors of previous studies (Einspruch & Forman, 1985), there is a compelling reason that NLP model should be restudied with a fresh outlook.

d. Most importantly, the author of this study, would like to add that most of the previous studies have failed due to the lack of appropriate instruments which are sensitive enough to detect and measure magic-like subtle NLP phenomena.

STATEMENT OF THE PROBLEM

This study strives to investigate if shifts of a person's eyes, as proposed by NLP Model, can consistently detect one's primary representational systems (PRS) when a person is accessing subjective experience to retrieve relevant information.

Secondly, the present study attempts to determine if PRS used by the people while accessing to previously stored information is a trait phenomenon or a state phenomenon. In other words, if a person uses the same PRS when accessing or changes PRS every time in the contextual reference according to the nature of the stored information.

For the systematic investigation of the preceding problems, the following research hypotheses were generated:

a. There is no significant difference between the total number of frequency counts of eye shifts in any one particular direction (i.e. eyes up and to the right, eyes up and to the left, eyes level and to the right, eyes level and to the left, eyes down and to the right, eyes down and to the left).

b. There is no significant difference between the frequency counts of participating subjects after they are identified as visuals, auditory, and kinesthetic through eye movements criteria of NLP.

c. There is no significant difference between contextually determined statements as visual, kinesthetic, auditory, and unspecified when compared with the similar findings (visual, auditory, kinesthetic, auditory, and unspecified determined through eye movements.

d. There is no significant difference between primary representational systems of subjects when determined through eye movements model and when these PRS's were self-reported by the subjects.

e. There is no significant difference between the primary representational systems of males and females.

f. There is no significant difference between the primary representational systems of Cajun and non-Cajun participants.

A FRESH LOOK AT NLP LITERATURE

Since numerous studies (Beale, 1981; Dorn, Atwater, Jereb, & Russell, 1983; Ellickson, 1983; Falzett, 1981; Graunke & Roberts, 1985; Gumm, Walker, & Day, 1982; Harnendez, 1981; Owens, 1978; Thomason, Arbuckle, & Cady, 1980) have failed to detect participants' primary representational systems through eye movements, the author of this study is compelled to have a refresher look over the assumptions of the NLP model.

For this reason, I would not try to find flaws and criticize the previous empirical studies, but rather go back to the original related literature and conduct my own fresh study, free from any biases, assumptions, and duplications. A reader interested to review previous studies is well advised to refer to Sharpley (1984) and Einspruch and Forman (1985).

Grinder and Bandler (1976) have given a detailed description about representational systems the very first time in their pioneering book, The Structure of Magic II when they state:

> Each of us, as a human being, has available a number of different ways of representing our experience of the world. Following are some examples of the representational systems each of us can use to represent our experiences. We have five recognized senses for making contact with the world: we see, we hear, we taste, and we smell (p. 6).

NLP model believes that through these five senses also called representational systems, we take in the experience of the world around us. In other words, "what we sense externally (whether conscious or unconscious) we translate into internal representations that, in turn, mediate our behavior" (Lankton, 1980, p. 17).

For the purpose of our study, it is important to note what Grinder and Bandler (1976) describe the primary representational systems as follows:

> To some degree, each of us has, potentially, the ability to create maps in each of the five representational systems. However, we tend to use one or more of these representational systems as a map more often than the others...Furthermore, each person will have a most highly valued representational system which will differ from the most highly valued representation system of some other person (pp. 8-9).

OBSERVATIONS ABOUT NLP MODEL

Proponents of NLP model strive to study the structure of subjective experience of their clients through step-by-step procedures to yield the predicted results. Moreover, they believe that this mosaic or kaleidoscopic structure of people's subjective experience are created by the interactions of sensory experiences received through input channels of the five senses, namely through seeing, hearing, feeling, touching, and tasting.

NLP model contends that humans never experience the reality of their world. Whatever the reality, it is only experienced through the representations made by the five senses. For this reason, they have named the five senses as the representational systems and postulate that "the map is not the territory" (Grinder and Bandler, 1976, p. 4). Dilts (1983) put more clearly stating that "the representations we use to organize our experiences of the world are not the world. They are neurological transformations that may or may not be accurate" (p. 7). The distortions and disparity caused as such are one of the main reasons people have problems. The philosophy behind NLP model becomes quite obvious when Grinder and Bandler (1976) assert:

> Human beings live in a "real world." We do not, however, operate directly or immediately upon that world, rather, we operate within that world using a map or series of maps of that world to guide our behavior within it.

> These maps or representational systems, necessarily differ from the territory that they model...
>
> When people come to us in therapy expressing pain and dissatisfaction, the limitations which they experience are typically, in their <u>representation</u> of the world not world itself. (p.3).

Lankton (1980) explains further that "what we sense externally (whether conscious or unconscious) we translate into internal representations that, in turn, mediate our behavior" (p. 17). In a nutshell, these "representational systems are the building blocks of behavior" (Dilts, Grinder, Bandler, & DeLozier, 1980, p. 17). This explains why so much emphasis has been placed on the representational systems and their identifications in NLP research studies.

Since research studies conducted so far concerning representational systems are not conclusive and many questions remain unresolved, it is imperative that we review NLPers' assumptions afresh. For the purpose of this study, the pertinent postulations made by NLP pioneers, Grinder and Bandler (1976) about representational systems follow:

a. Each of us, as a human being, has available a number of different ways of representing our experience of the world. Following are some examples of the representational systems each of us can use to represent our experiences.

   We have five recognized senses for making contact with the world: we hear, we feel, we taste, and we smell (p. 6).

b. To some degree, each of us has, potentially, the ability to create maps in each of the five

representational systems. However, we tend to use one or more of these representational systems as a map more often than the others...which is to say that we more highly value one or more of these representational systems.

Furthermore, each person will have a most highly valued representational system which will differ from the most highly valued representational system of some other person (pp. 8-9).

c. The various ways in which people organize their experiences by creating most highly valued representational systems... once understood, can be valuable to you in a number of ways.

First, a therapist's ability to understand more about how his clients experience and represent the world will enable him to better create experiences which they may use to change their lives. A second and probably the most important result of comprehending your client's representational system is trust (pp. 13-14).

d. When you are seeking information from your client, phrasing questions with the appropriate presupposed representational system will enable the client to respond with greater ease and clarity. For example, when we are asking for information from a visual, we can phrase questions in the following ways:

> How do you see the situation?
> What do you see stopping you? (p. 16)

IDENTIFICATION OF PRIMARY REPRESENTATIONAL SYSTEMS

It is obvious from the preceding quotes that proponents of NLP place great emphasis on communicating with their clients through their highly valued or primary representational systems by matching their predicates. For example, Grinder and Bandler (1976) recommend that:

> If the person's representational system is visual, ask the questions:
>
> Do you make pictures in your head?
> Can you see what I am saying?
>
> If the person's representational system is kinesthetic, ask the questions:
>
> Do you feel what you are saying?
> Are you in touch with what I am saying?
>
> If the person's representational system is auditory, ask the questions:
>
> Do you hear voices in your head?
> Do you hear what I am saying inside your head? (p. 12)

Naturally it is important that clients' primary representational systems are identified before proper predicates are employed to match with their sensory experiences. Dilts, Grinder, Bandler, and DeLozier (1980) have suggested several methods to identify these representational systems such as: verbal predicates, eye movements, gestural accessing cues, breathing changes, posture and muscle tone changes, tonal and tempo changes, etc.

Keeping in line with the inquiry of previous studies, this study will focus on <u>eye movements as accessing cues</u> to identify

clients' primary representational systems. Dilts, Grinder, Bandler, and DeLozier (1980) "have noticed that the eye movements people make as they are thinking and processing information provide a remarkably accurate index for sensory specific neurological activity" (p. 79). Dilts et at. (1980) suggested the following paradigm to follow while attending to the accessing cues to determine right handed persons' primary representational systems:

Accessing Cue	Representational System Indicated	
eyes up and to the left	eidetic imagery	(V)
eyes up and to the right	constructed imagery	(V)
eyes defocused in position	imagery	(V)
eyes down and to the left	internal dialogue	(A)
eyes left or right, same level of gaze	internal auditory	(A)
eyes down and to the right	body sensations	(K)

Note: Telephone positions and hand(s) touching on mid-line accessing cues are omitted from this paradigm to focus only on eye movements.

Special Considerations While Using Eye-movements Model

One of the significant contributions of the present study is to pay special attention to the key terms used in the instructions given by the NLPers while using eye-movement model. For this reason, some important statements made by the NLP proponents are gleaned out from various sources to share with the readers as follow:

1. By most highly valued representational system we mean the representational system the person typically uses to bring information into consciousness (Grinder and Bandler, 1976, p. 26)

2. Accessing cues are behaviors that we develop to tune our bodies and affect our neurology in such a way that we can access one representational system more strongly than the others (Dilts et al., 1980, p. 46)
3. When an individual is asked to recall some bit of information that is not available in his/her immediate sensory environment, he/she must go through the process of accessing that information, either through memory or construction (Dilts, 1983, p. 17)
4. NLP has found that the direction and position to which an individual momentarily averts his eyes, when recalling information or answering a question, correspond to the representational system he is accessing. (Dilts, 1983, p. 6)

Three key terms used in the above statements such as "bring information into consciousness," "accessing," and "recall" are most important and may be considered the corner stones of this study. Considering these three terms, I propose that shifts in the eyes of the clients can only be witnessed if they are asked the questions which may require them to recall the information. Similar observation has been made previously by Harman and O'Neill (1981) when they pointed out that "people use all their representational systems. However, most people will have a favored or "lead" system that they rely on most exclusively in times of stress or when problem solving" (p. 450).

METHOD

Participants

One hundred and two (102) right handed students from four educational psychology classes at a middle size university located in the south central Louisiana participated in this study. The participation in this study was on the voluntary basis. No class

credits or any other type of rewards were made. These students filled out a personal data sheet which revealed that 58 of them identified themselves as Cajuns and 44 as non-Cajuns. The purpose of this study was not discussed with the participants. However, all the participants read and signed the consent form to agree to videotaping interviews.

Procedure

All the participants were scheduled from 8:00-11:00 in the morning and 1:00-4:00 in the afternoon at half an hour intervals for two weeks to videotape interview sessions. Friday afternoons were not used for this purpose as the students were anxious to visit their homes. The interview sessions were scheduled in a manner that the participants did not need to miss their regular classes. A pre-interview protocol was prepared which was used for every interviewee. The graduate assistant, who was unaware of the purpose of this study, read the same directions to each and every subject as stated below before starting the videotaping session:

> This session will take approximately ten minutes. I am going to ask you to answer many questions. Each question is allowed 10 seconds. Try to recall or think hard the best you can before you give up and say: "I don't know" or "I don't remember." Are you ready?

Videotaping the Sessions

A special consideration was given to seating arrangements while videotaping these sessions. The subject and the interviewer sat face to face at a distance of approximately three and a half feet from each other in a small 12' X 12' conference room. Only one subject was allowed in this room at a time. A sign reading,

"Session in progress, please don't disturb" was displayed on the door to avoid interferences.

A videotape camera was arranged in such a way that it focused mainly on the face of the subject. The room was well lighted, but to make clearer and brighter pictures a standing lamp was used slightly behind the chair of the subject. The interviewer used the special instructions from the pilot study of this author which read:

> Never ask the subjects to focus their attention in one and only one direction when videotaping their responses for scoring purposes. For example, statements such as: (a) Look at me...(b) Look at the video camera before you answer can limit the free eye movements of the subjects. (Sandhu, 1991, p. 43)

Using Sandhu Primary Representational Systems Inventory:

This study is distinctly different from others in its use of a special set of carefully constructed questions which make the subjects think hard to "to go through the process of accessing information, either through memory or construction" (Dilts, 1978, p. 17). The author stresses that when and only "when given a recall task, identification of the primary representational systems can be made," (Sandhu, 1991, p. 40).

For example, the following two questions from SPRS Inventory are shared with the readers to make this point clear:

Q. 1. Do you smoke?

Ans. Eyes response: (Most probably eyes will not shift in any one particular direction)

Q. 2. If you multiply 13 by 7 and add 11 to the product, what would be your answer?

Ans. Eyes response: (Eyes will shift in some direction to indicate the primary representational system, unless one gets so discouraged that without even trying to figure out responds, "I don't know").

(Sandhu, 1991, p. 41)

The SPRS Inventory consisted of total 52 items. Equal number of question items (13) were related to visual, auditory, and kinesthetic contexts. Another set of 13 items were included which required only yes/no responses and did not put the respondents under any stress to recall or access the memory for answers. These neutral items were used as control items to test the assumption that eyes will not shift in any direction. The author of the present study postulated that the respondents' eyes will be non-focused. In other words, the eyes will not shift in any one particular direction.

These control items were also intended to provide attention relief for the respondents when constantly accessing could become fatigue inducing and a painful experience. All these 52 questions were finalized after a careful review was made by three experts familiar with Neurolinguistic Programming. Furthermore, all these items were arranged in a random order.

Scoring of Eye-movements

A. Training of raters:

Two graduate students, naive to NLP Eye-movements Model and the purpose of this study, were trained how to score the eye-movements

from the videotaped sessions. This training included the following steps:

1. Making Raters Aware of a Three Step Phenomenon:

   a. **Intake or input:**

      The subject becomes attentive to listen to the question. Once the question is understood, the respondent breaks the eye contact with the examiner momentarily, (like the sign from the computer, one moment please!)

   b. **Process of Accessing:**

      The subject starts processing for the desired information. S/he looks for answers. The eyes start shifting in different directions as postulated by NLPers. In some instances, the answer may occur to the subject when his or her eyes are in defocused state.

   c. **Output Response:**

      Subject answers the question. A subtle facial change takes place to indicate relief after stress. Eyes shift back to some other direction to punctuate their search for the answer.

(Sandhu, 1991, p. 42)

2. **Making Notations:**

   The coders were instructed to mark the directions of eye shifts when the subjects

were thinking hard to recall or construct the information from their memory at the previous stated step (b): process of accessing.

3. **Practice Through Pilot Study:**

After receiving proper instructions on how to make notations, the coders rated eight different videotaped sessions of a pilot study separately. The interrater observer agreement percentages were calculated as:

$$\frac{\text{Total agreement}}{\text{Total agreement + Total disagreement}}$$

yielded 92% interrater agreement which was considered satisfactory to allow the coders to rate the main research study videotaped sessions.

4. The coders were provided necessary forms to make their checkmarks, indicating the frequencies of eye movements in different directions. Both these coders rated 102 video sessions separately. All the rating were completed in four weeks.

Organization and Statistical Analysis of the Data:

Step one: All the frequency data, received from both the raters, for each subject were arranged separately under four categories: visual, kinesthetic, auditory, and nonfocused. The term nonfocused was coined by this author to identify those responses which the subjects made spontaneously, without thinking hard and moving their eyes in anyone particular direction. (Mostly yes/no responses to control items).

Step two: In order to determine the interrater agreement between the two coders, statistical procedures as explained by Cohen (1960) was used to calculate **Cohen's kappa**. This method for nominal data has also been recommended by other investigators in the past such as; Tinsley and Weis (1975); and Buckner et al (1987). Since a strong coefficient of agreement (K=.84) was determined, the frequency data of both raters were combined for further analyses.

Step three: Taking the frequency responses of each subject, in four categories of visual, kinesthetic, auditory, and nonfocused, a separate Chi Square of fit was calculated for all 102 participants individually.

Furthermore, in order to determine which categories have been the major contributors to statistical significance, the **standardized residual** was computed for each of the categories as follows:

$$R = \frac{O - E}{\sqrt{E}}$$

(Hinkle, Wiersma, & Jurs, 1988, p. 556)

Step four: Further analysis to determine if there are any significant differences between sexes, ethnic groups, and numbers of people identified as visuals, kinesthetic, auditory, etc., Chi Square tests of homogeneity were used.

Step five: After all the videotaping sessions were completed, a debriefing session was held with the subjects. At this time, the purpose of this study was explained and the subjects were asked to write on a piece of paper if they consider themselves as visuals, auditory, or kinesthetic. This information was used to match with results of this study.

Results

The results of this study are reported here categorically in context of previously stated hypotheses:

Table 1 Insert Here

Hypothesis 1: Individually performed one-sample case: X^2 goodness-of-fit test for all 102 subjects showed statistically significant difference in the frequency counts of 99 subjects at alpha level = .05.

First hypothesis was rejected. In other words, when people are asked some information through hard recall their eyes shift in some particular direction as postulated by NLP proponents.

a. During the debriefing session, three subjects identified as having no one particular primary representational system pointed out that they did not try hard to recall the information but just gave any answers or simply said they did not know.

b. Thirteen subjects were identified as having more than one primary representational system. Further analysis revealed that 12 of them had a combination of being visual and auditory and

they were all female subjects. The thirteenth subject was male subject who had a combination of auditory and kinesthetic PRS.

c. None of the responses on the control items were significant. However, some subjects did use a specific PRS even to answer the yes / no questions. The frequency scores of such subjects ranged from 0-19.

Table 2 Insert Here

Hypothesis 2: The analysis of this study indicated the statistically significant difference between the subjects identified as visual auditory, kinesthetic and persons with more than one primary representational system. Hence, hypothesis 2 was rejected at alpha = .001 level.

These numbers included:

More than one PRS = 13

* Number no preference = 3

Clearly Visuals = 61

Clearly Auditory = 17

Clearly Kinesthetic = 8

Insert Table 3 Here

Hypothesis 3: No statistically significant relationship was found between the contextual nature of the test items as visual, auditory, and kinesthetic and the shifts in

the eye movements of the subjects to match them as such.

The hypothesis 3 was not rejected signifying that contextual nature of the information has no impact upon the primary representational system of the individual. In other words, PRS does not change with the nature of the information. In stressed recalls, subjects always access to the information through their same primary representational system.

Insert Table 4 Here

Hypothesis 4: No significant relationship was found between the self-reported PRS of the subjects and the one identified through this study. However, it appears that most of the subjects would like to consider themselves as visuals.

Insert Table 5 Here

Hypothesis 5: No statistically significant difference was found between males and females at = .05. However, one very striking finding indicated that incidence of fuzzy PRS were much higher in women than in men, (12 vs 1).

Insert Table 6 Here

Hypothesis 6: No statistically significant difference was found between Cajuns and Non-Cajuns at alpha level = .05.

Additional Findings:

Upon the conclusion of this study, several additional findings were revealed. First, 13 subjects as previously stated were found to have more than one primary representational system. The subsequent review of NLP literature evinced this phenomenon as a fuzzy function (Bandler and Grinder, 1975) and Lankton (1980). For this reason, this new category was added to the other three primary representational systems: visual, kinesthetic, and auditory. It was interesting to note that the number of fuzzy representational systems for females were much higher when compared with those of male subjects, (F=12, M=1).

A re-examination of the videotaped sessions, revealed that 53% (9 out of 17) subjects identified as auditory, repeated experimenter's (graduate assistant) questions aloud or mumbled before answering them. Some visuals closed their eyes, some squinted them, and still some cupped them before giving their answers.

Twenty randomly selected videotapes were re-viewed for equal number (N=5) of visuals, kinesthetic, auditory, and subjects with fuzzy PRS to compare their response time for the total inventory. Visuals total response time was the shortest, followed by auditory, kinesthetic, and subjects with fuzzy PRS.

DISCUSSION

This research study examined the eye movements model of NLP to verify the validity of three primary representational systems as proposed by NLP proponents. The analyses of the data supported the claims made in NLP literature that people can be identified as visuals, auditory, and kinesthetic. Furthermore, this study emphasizes the fact that it is possible only if the subjects access the information through stressed recalls. Thirteen yes/no items used as control items verify the fact that when people don't have to think hard, their eyes don't shift in any particular direction. It also became obvious that there are some subjects, (13/99) who use more than one PRS while making hard recalls.

This study also found that in a given population, the majority of people are visuals, followed by auditory, fuzzy, and kinesthetic. This study did not find that while answering contextually visual, auditory, and kinesthetic items, people use respective primary representational systems. On the contrary, this study supports the hypothesis that the people have developed a specific PRS which they use invariably when they have to access to their memory under hard or stressed recalls.

The subjects seem to have no conscious knowledge if they are visuals, auditory, fuzzy, or kinesthetic. Most of them if asked like to perceive themselves as visuals. This study did not find any significant differences in the distribution of various primary

representational systems between genders and Cajuns and non-Cajuns as two separate ethnic groups.

Limitations: This study is not without limitations. No replication study has been done yet by using Sandhu Primary Representational Systems Inventory. Reliability information about this inventory is not available.

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Table I

Results of X^2 for the (One-sample case) PRS Data for 102 Subjects

Sex	Visuals	Auditory	Kinesthetic	Not Clear	Fuzzy
F	32	9	4	2	12
M	29	8	4	1	1
Total	61	17	8	3	13

The data shown in this table was used for subsequent analyses. However, three subjects under not clear category (F=2, M=1) were not included.

Table 2

Chi Square One Variable Contingency Table
(Nominal Data, One Sample; X^2 Goodness-of-fit-Test)
Frequency Table of Primary Representational Systems

(PRS)	Visuals	Auditory	Kinesthetic	Fuzzy	Total
(Obs.)	61	17	8	13	99
(Exp.)	24.75	24.75	24.75	24.75	99
(X^2)	53.09	2.43	11.34	5.58	72.44

Chi-Square (3) = 72.44 $p < .001$

Table 3

Data for Calculating X^2 Statistics for the Frequency of Observed and Expected Eye Movements in Different Directions as Postulated by the Contextual Nature of Inventory Items

		Items Matched		Total Items
A.	Visuals	Observed	618	1287
		Expected	557.15	1347.84
		Deviation	6.64	2.75
B.	Auditory	Observed	502	1287
		Expected	523.22	1265.77
		Deviation	.861	.356
C.	Kinesthetic	Observed	476	1287
		Expected	515.62	1247.38
		Deviation	3.045	1.258

Chi-Square (2) = 14.912 $p < .001$

* Note N = 99 Items in each category of visual, auditory, and kinesthetic = 13. Possible frequency number in each category, 99 x 13 = 1287.

Table 4

Data for Calculating X^2 Statistics for Identified and Guessed Primary Representation Systems

	Observed	Expected	Chi-Square
A. Visuals (Identified)	61	68.73	.87
(Self-reported)	48	40.27	1.48
B. Auditory (Identified)	17	15.13	.23
(Self-reported)	7	8.87	.39
C. Kinesthetic (Identified)	8	6.94	.16
(Self-reported)	3	4.06	.28
D. Fuzzy (Identified)	13	8.20	2.81
(Self-reported)	0	4.80	4.80

Chi-Square (3) = 11.035 $p < .0119$
Contingency Coefficient = .256

Table 5

Data for Computing X^2 for Gender Differences in Primary Representational Systems

		Females	Males	Total
	Identified	32	29	61
Visual	Expected	35.12	25.88	
	Chi-Square	.28	.38	
	Identified	9	8	17
Auditory	Expected	9.79	7.21	
	Chi-Square	.06	.09	
	Identified	4	4	8
Kinesthetic	Expected	4.61	3.39	
	Chi-Square	.08	.11	
	Identified	12	1	13
Fuzzy PRS	Expected	7.48	5.52	
	Chi-Square	2.72	3.70	
		57	42	99

Chi-Square (3) = 7.411 p = .0594
Contingency Coefficient = .264